Mathematical Modeling of Hindu Philosophy: Zero, One, and Infinity

Version 2: Enhanced with Negative Domain and Primordial State Analysis

Devendra Soni*

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Abstract

This paper extends the mathematical modeling of Hindu philosophical concepts introduced in Version 1 by incorporating the negative domain of the continuous function $f(t) = \frac{t}{1+t}$. Version 2 introduces the **Primordial State** at $t = -1$, a cosmic singularity where infinite dissolution and creation potential converge. Through analysis of the Anti-Nirguna realm, Graham's Number convergence, and the Grand Paradox, we provide quantitative support for Advaitic non-dualism and cyclical cosmological principles, bridging ancient wisdom with modern scientific frameworks.

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*Independent Researcher. Corresponding author email: Erdevendrasoni2022@gmail.com. ORCID: https://orcid.org/0009-0003-3848-6464.

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1 Introduction: Version 2 Extension

Building upon Version 1's foundational framework, this paper explores the negative domain of the model, introducing the **Anti-Nirguna** realm and the **Primordial State**, which unify Vedic philosophy with modern cosmological concepts.

2 Methods and Models

2.1 Continuous Model: $f(t) = \frac{t}{1+t}$

Definition: Let $f(t) = \frac{t}{1+t}$, defined for $t \in \mathbb{R} \setminus \{-1\}$ (extended from Version 1's $[0, \infty)$).

2.1.1 Positive Domain Recap

- $\lim_{t\to 0} f(t) = 0$ (**Nirguna**): Formless consciousness.
- $\lim_{t\to \infty} f(t) = 1$ (**Saguna**): Manifest unity.
- $f'(t) = \frac{1}{(1+t)^2} > 0$: Monotonic growth.
- $f''(t) = -\frac{2}{(1+t)^3} < 0$: Asymptotic slowing.

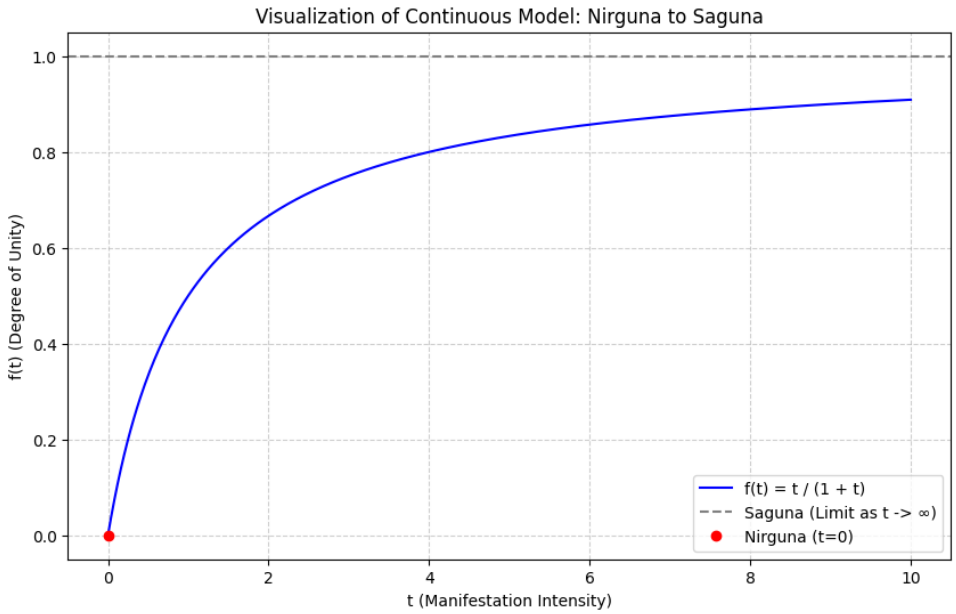

Figure 1: Positive domain progression from Nirguna (0) to Saguna (1).

2.1.2 Negative Domain Analysis

For $t < 0$, the model reveals the **Anti-Nirguna** realm, representing pre-manifest states:

$$f(t) = \frac{t}{1+t}, \quad t < 0 \tag{1}$$

$$f(-1) = \frac{-1}{1+(-1)} = \text{undefined} \quad \text{(Primordial State)} \tag{2}$$

Limits at the singularity:

$$\lim_{t \to -1^-} f(t) = -\infty \quad \text{(Mahapralaya: Infinite Dissolution)} \tag{3}$$

$$\lim_{t \to -1^+} f(t) = +\infty \quad \text{(Srishti: Infinite Creation)} \tag{4}$$

These limits reflect the cyclic transition between dissolution and creation in Hindu cosmology.

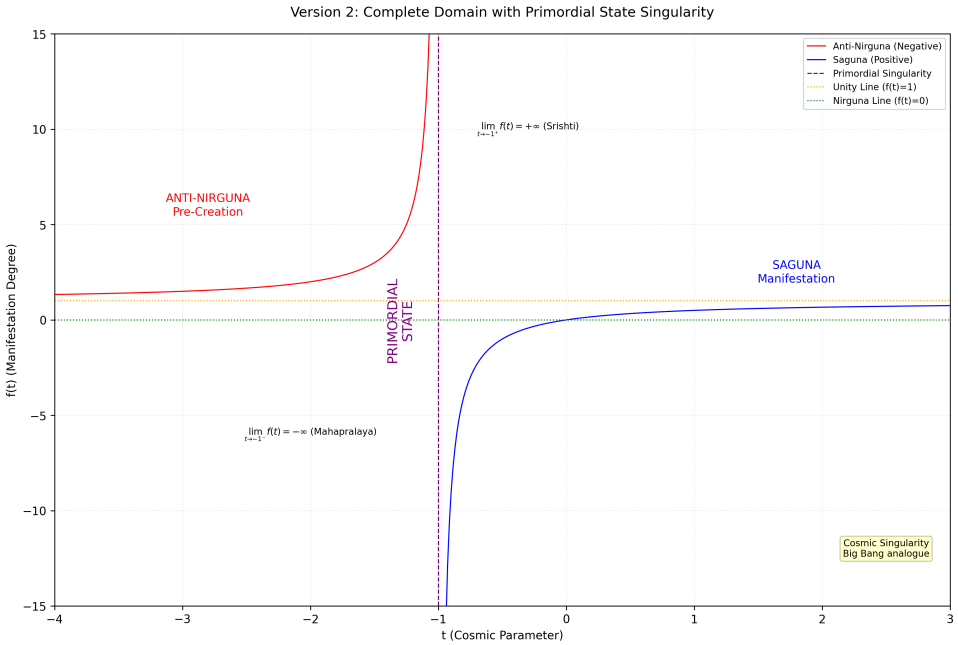

Figure 2: Extended domain showing the Anti-Nirguna realm and Primordial State at $t = -1$.

2.2 Primordial State: Vedic and Scientific Singularities

The Primordial State ($t = -1$) represents a cosmic singularity, analogous to the Big Bang but cyclical in nature. It embodies both **Mahapralaya** (dissolution) and **Srishti** (creation).

Table 1: Negative Domain Analysis and Cosmic Interpretation

Input (t)	**Output** $f(t)$	**Exact Form**	**Cosmic Interpretation**
-10.0	1.111	$\frac{10}{9}$	Transcendent state beyond dissolution
-5.0	1.25	$\frac{5}{4}$	Stable post-dissolution manifestation
-2.0	2.0	2	Doubled reality emerging from void
-1.5	3.0	3	Trinity principle activation
-1.1	11.0	11	Near-infinite creation potential
-1.0	**Undefined**	$\pm\infty$	**Primordial State: Cosmic Singularity**
-0.9	-9.0	-9	Intense dissolution approaching singularity
-0.5	-1.0	-1	Perfect anti-unity (negative Saguna)
-0.1	-0.111	$-\frac{1}{9}$	Minimal anti-manifestation
0.0	0.0	0	**Nirguna: Formless Consciousness**

2.3 Grand Paradox: Graham's Number Convergence

For Graham's Number (G), an extremely large finite number:

$$f(G) = \frac{G}{1+G} \approx 1 \quad \text{(asymptotic unity from below)} \tag{5}$$

$$f(-G) = \frac{-G}{1-G} \approx 1 \quad \text{(asymptotic unity from above)} \tag{6}$$

This **Grand Paradox** shows that extreme order and chaos converge to unity, supporting Advaitic non-dualism:

$$\boxed{\lim_{t\to+\infty} f(t) = \lim_{t\to-\infty} f(t) = 1} \tag{7}$$

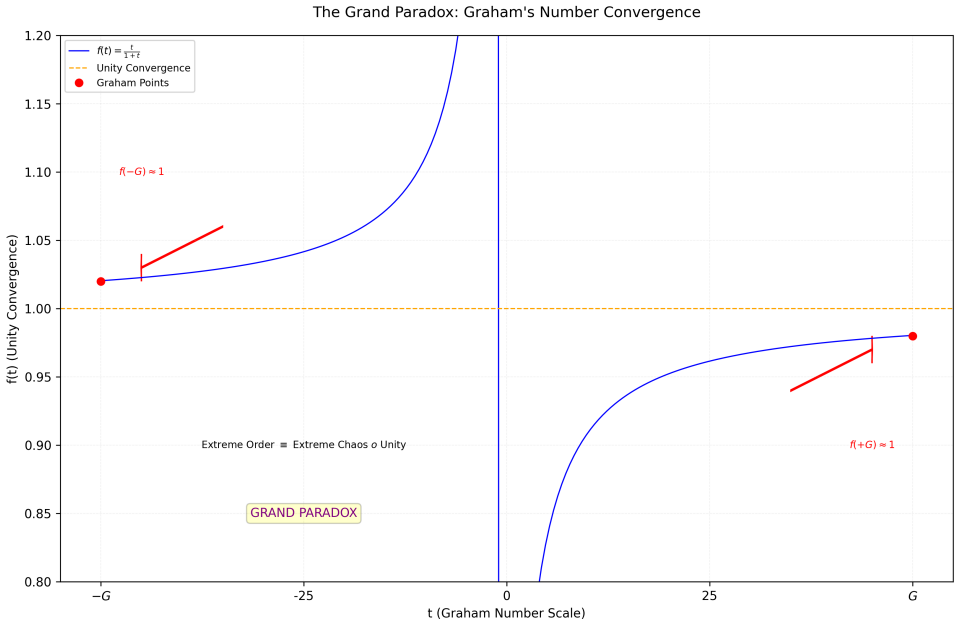

Figure 3: Convergence of positive and negative Graham's Numbers to unity.

2.4 Cyclical Cosmology

The function's symmetry supports Hindu cyclical time concepts, as shown in Table 2.

Table 2: Cosmic Phases and Mathematical Correspondence

Cosmic Phase	**Domain**	**Mathematical Behavior**	**Hindu Concept**
Mahapralaya	$t \to -1^-$	$f(t) \to -\infty$	Great Dissolution
Primordial State	$t = -1$	Undefined Singularity	*Bindu*/Cosmic Seed
Srishti	$t \to -1^+$	$f(t) \to +\infty$	Creation Emergence
Sthiti	$-1 < t < 0$	$f(t) < 0$	Preservation in Anti-realm
Nirguna	$t = 0$	$f(t) = 0$	Formless Consciousness
Saguna	$t > 0$	$0 < f(t) < 1$	Manifest Evolution
Moksha	$t \to +\infty$	$f(t) \to 1$	Liberation/Unity

2.5 Discrete Model: Creation Ladder

Definition:

$$A_n = \begin{cases} 0, & n = 0 \\ 1, & n = 1 \\ 2^{n-1}, & n \geq 2 \end{cases}$$

- $A_0 = 0$: Nirguna (unmanifest void).
- $A_1 = 1$: Saguna (unified reality).
- $\lim_{n\to\infty} A_n = \infty$: Anant (infinite Creator).

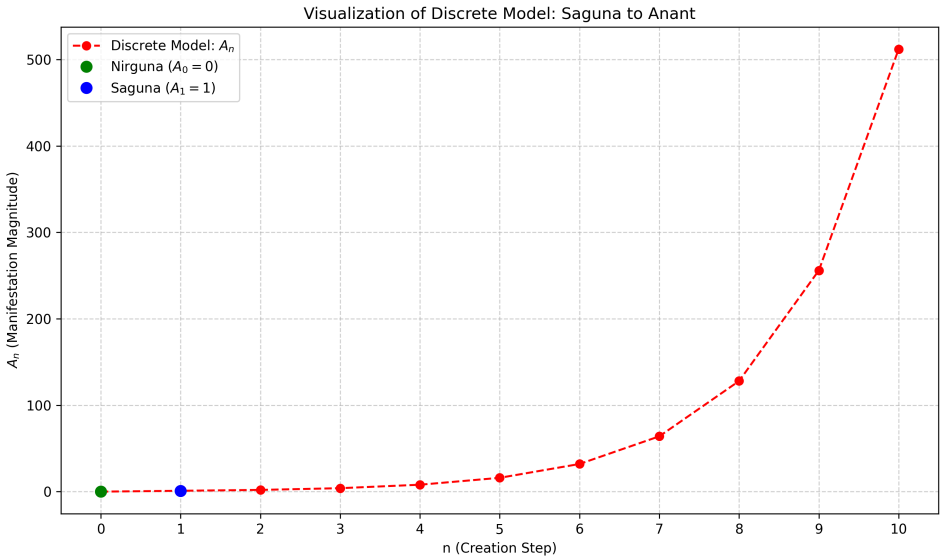

Figure 4: Exponential progression from Saguna to Anant.

Table 3: Discrete Model Interpretation

n	A_n	**Interpretation**	**Sanskrit Concept**
0	0	Nirguna: unmanifest void	Nirguna Brahman
1	1	Saguna: unified reality	Saguna Brahman
2	2	Basic life forms	Prajapati (creation)
3	4	Ecosystems/interactions	Vishva (cosmic forms)
4	8	Complex civilizations	Loka (worlds)
5	16	Multi-layered societies	Samsara (cyclic existence)
∞	∞	Anant: infinite Creator	Anant

2.6 Limit-Based Model

$$\text{God} = \lim_{x\to\infty}(0 + x^n)$$

This unifies Nirguna (0), Saguna (1), and Anant (∞).

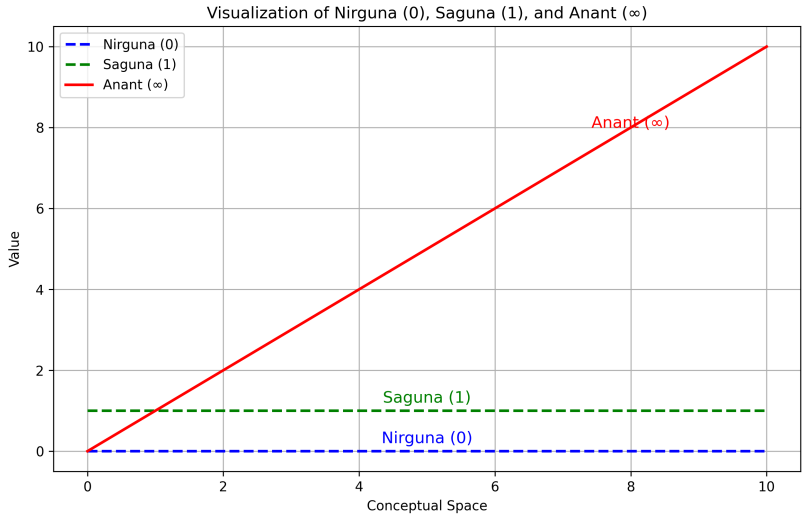

Figure 5: Integration of divine aspects: 0, 1, and ∞.

3 Discussion

3.1 Unified Framework

The models collectively provide a comprehensive view:

- **Continuous Model**: Spans Anti-Nirguna, Primordial State, and Saguna.
- **Discrete Model**: Captures hierarchical creation.
- **Limit-Based Model**: Synthesizes divine aspects.

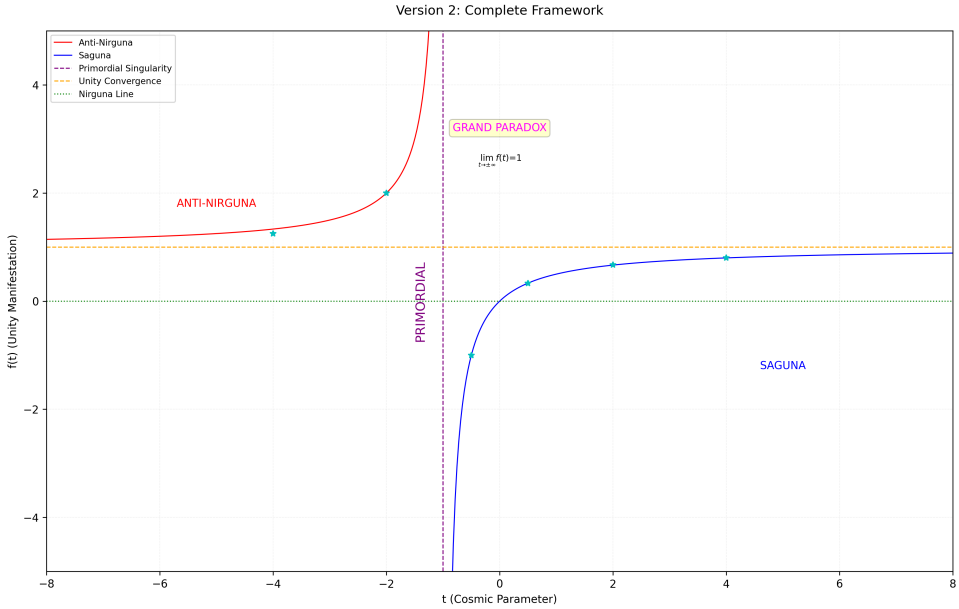

Figure 6: Unified mathematical representation of Hindu cosmology.

3.2 Scientific Parallels

- **Big Bang**: The Primordial State mirrors the cosmic singularity (1).
- **Cyclic Cosmology**: Symmetry supports oscillating universe theories (15).

4 Conclusion

Version 2 introduces the Primordial State and Anti-Nirguna realm, providing quantitative support for Advaitic non-dualism. The Grand Paradox and cyclical models bridge Vedic philosophy with modern cosmology, revealing the eternal rhythm of consciousness: God $= 0 \cup 1 \cup \infty$.

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Repository

Materials available at: GitHub Repository.